Sheet 1 of 19
Appl. No. 10/629,699; Filed: Jul 30, 2003
Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722
Inventors: FISCHER et al.
Tel. No.: 202-371-2600
For: Valve Pin Guidance and Alignment System for an Injection Molding Apparatus 1022 1014~ 1020

FIG. 1 (PRIOR ART)

Sheet 2 of 19 Appl. No. 10/629,699; Filed: Jul 30, 2003 Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722

Inventors: FISCHER et al. Tel. No.: 202-371-2600

For: Valve Pin Guidance and Alignment System for an

Injection Molding Apparatus

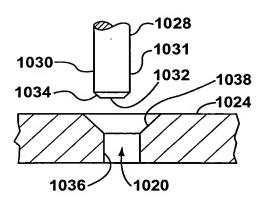


FIG. 2a (PRIOR ART)

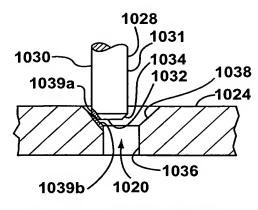


FIG. 2b (PRIOR ART)

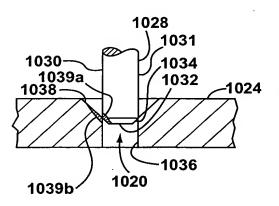


FIG. 2c (PRIOR ART)

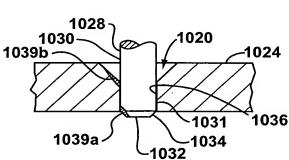
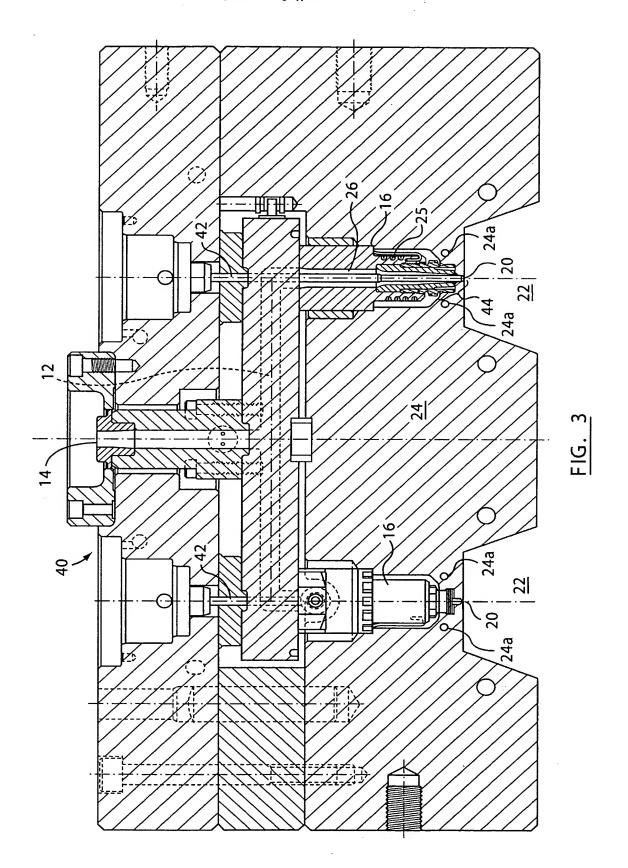


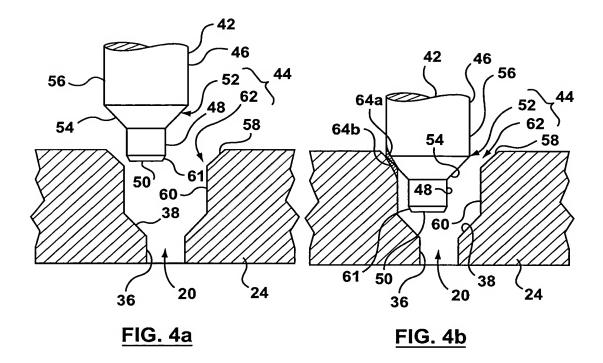
FIG. 2d (PRIOR ART)

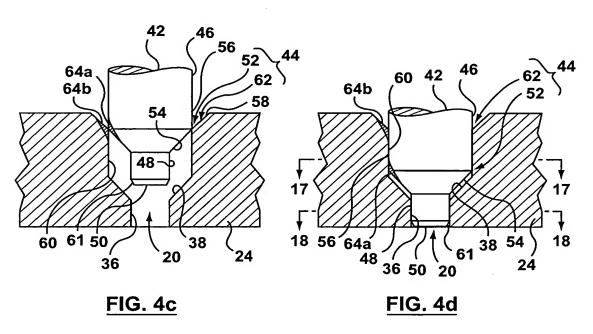
Sheet 3 of 19 Appl. No. 10/629,699; Filed: Jul 30, 2003 Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722

Inventors: FISCHER et al. Tel. No.: 202-371-2600

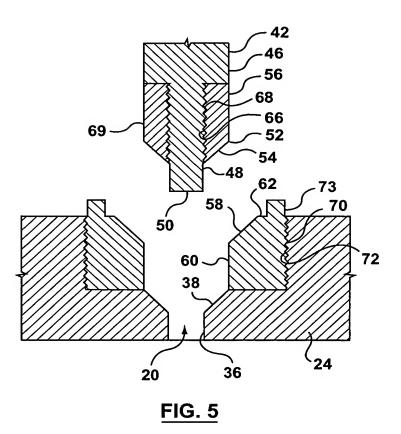


Sheet 4 of 19 Appl. No. 10/629,699; Filed: Jul 30, 2003
Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722
Inventors: FISCHER et al.
Tel. No.: 202-371-2600
For: Valve Pin Guidance and Alignment System for an Injection Molding Apparatus





Sheet 5 of 19
Appl. No. 10/629,699; Filed: Jul 30, 2003
Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722
Inventors: FISCHER et al.
Tel. No.: 202-371-2600
For: Valve Pin Guidance and Alignment System for an Injection Molding Apparatus



Sheet 6 of 19
Appl. No. 10/629,699; Filed: Jul 30, 2003
Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722
Inventors: FISCHER et al.
Tel. No.: 202-371-2600
For: Valve Pin Guidance and Alignment System for an Injection Molding Apparatus

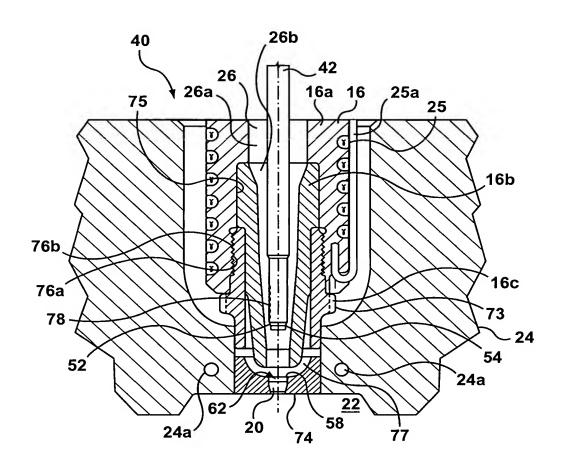


FIG. 6

Sheet 7 of 19
Appl. No. 10/629,699; Filed: Jul 30, 2003
Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722
Inventors: FISCHER et al.
Tel. No.: 202-371-2600
For: Valve Pin Guidance and Alignment System for an
Injection Molding Apparatus

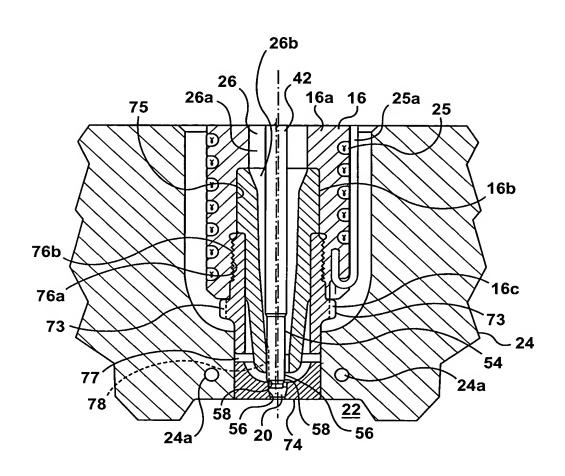


FIG. 7

Sheet 8 of 19
Appl. No. 10/629,699; Filed: Jul 30, 2003
Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722
Inventors: FISCHER et al.
Tel. No.: 202-371-2600
For: Valve Pin Guidance and Alignment System for an Injection Molding Apparatus

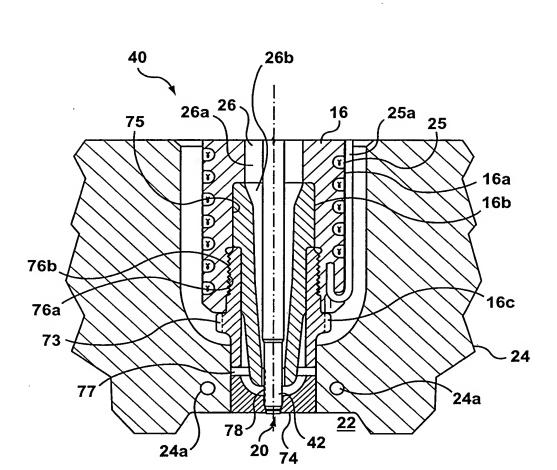
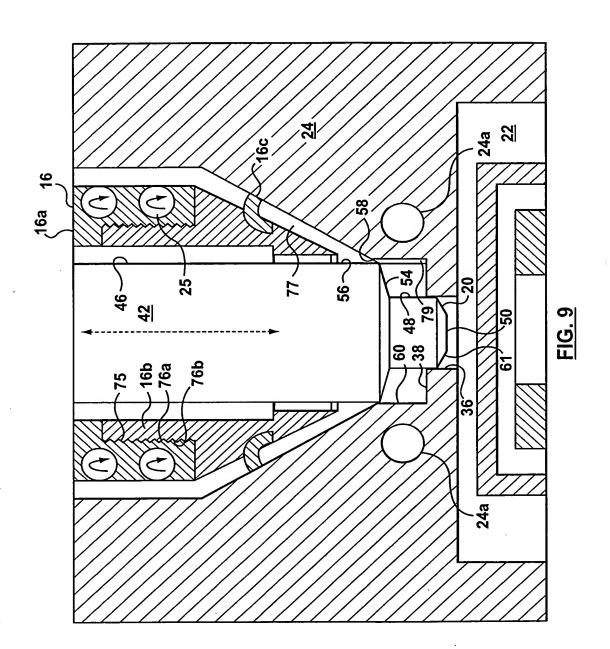


FIG. 8

Sheet 9 of 19
Appl. No. 10/629,699; Filed: Jul 30, 2003
Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722
Inventors: FISCHER et al.
Tel. No.: 202-371-2600
For: Valve Pin Guidance and Alignment System for an
Injection Molding Apparatus



Sheet 10 of 19 Appl. No. 10/629,699; Filed: Jul 30, 2003 Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722 Inventors: FISCHER et al. Tel. No.: 202-371-2600 For: Valve Pin Guidance and Alignment System for an Injection Molding Apparatus

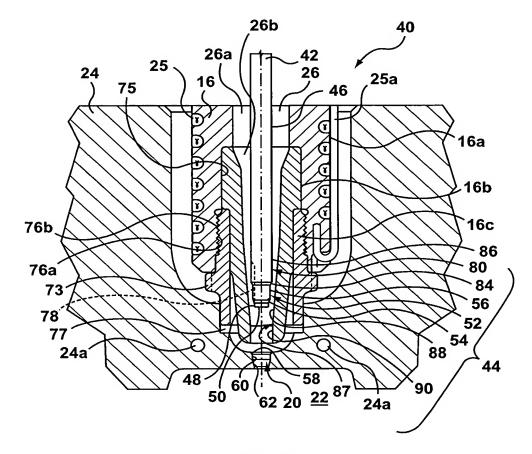


FIG. 10

Sheet 11 of 19
Appl. No. 10/629,699; Filed: Jul 30, 2003
Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722
Inventors: FISCHER et al.
Tel. No.: 202-371-2600
For: Valve Pin Guidance and Alignment System for an Injection Molding Apparatus

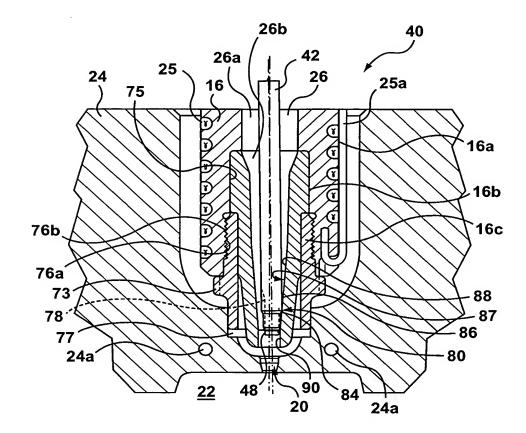


FIG. 11

Sheet 12 of 19
Appl. No. 10/629,699; Filed: Jul 30, 2003
Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722
Inventors: FISCHER et al.
Tel. No.: 202-371-2600
For: Valve Pin Guidance and Alignment System for an Injection Molding Apparatus

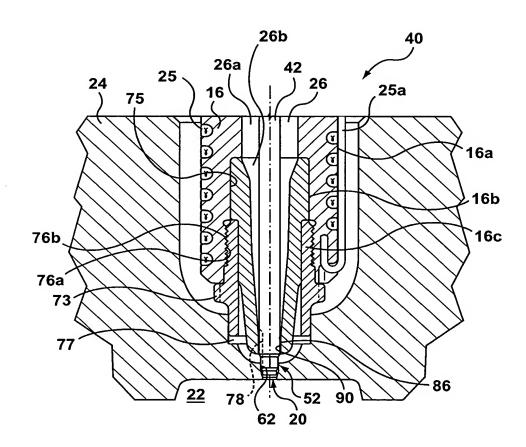


FIG. 12

Sheet 13 of 19 Appl. No. 10/629,699; Filed: Jul 30, 2003 Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722 Inventors: FISCHER et al. Tel. No.: 202-371-2600

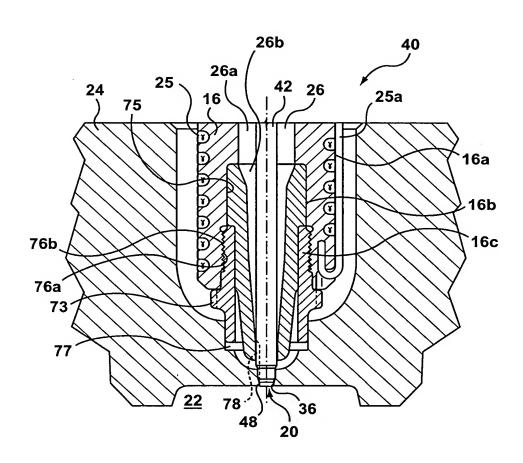


FIG. 13

Sheet 14 of 19
Appl. No. 10/629,699; Filed: Jul 30, 2003
Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722
Inventors: FISCHER et al.
Tel. No.: 202-371-2600
For: Valve Pin Guidance and Alignment System for an Injection Molding Apparatus

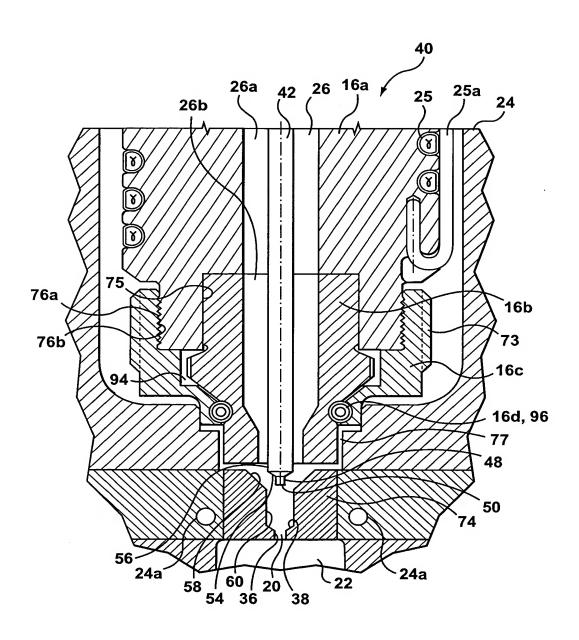


FIG. 14

Sheet 15 of 19 Appl. No. 10/629,699; Filed: Jul 30, 2003 Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722 Inventors: FISCHER et al. Tel. No.: 202-371-2600

For: Valve Pin Guidance and Alignment System for an

Injection Molding Apparatus

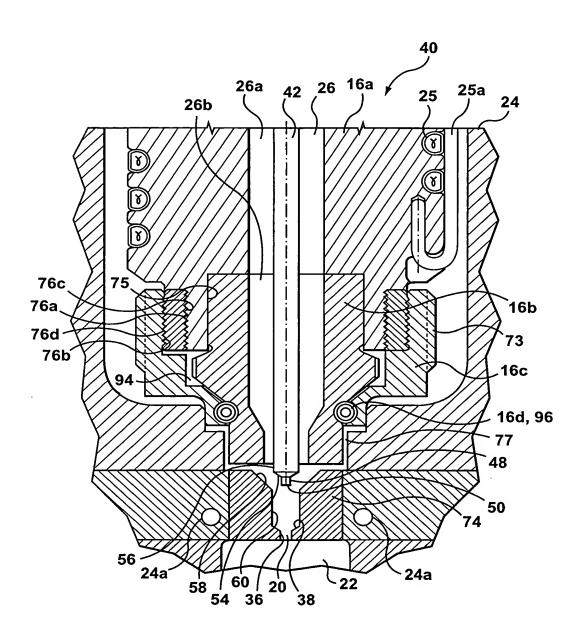


FIG. 15

Sheet 16 of 19
Appl. No. 10/629,699; Filed: Jul 30, 2003
Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722
Inventors: FISCHER et al.
Tel. No.: 202-371-2600

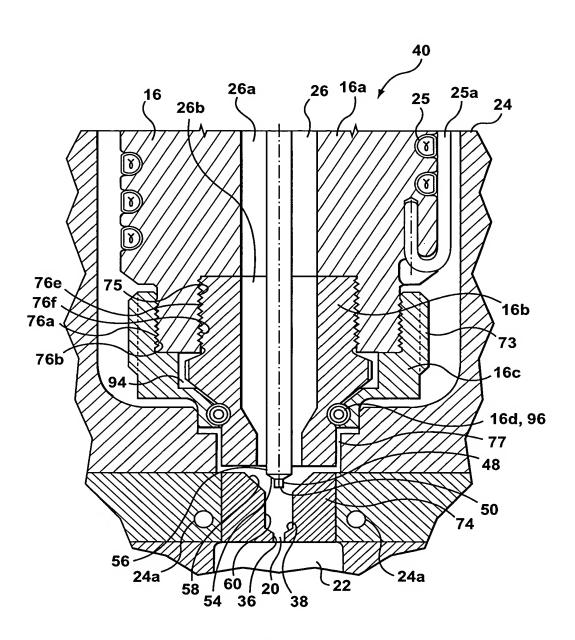


FIG. 16

Sheet 17 of 19
Appl. No. 10/629,699; Filed: Jul 30, 2003
Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722
Inventors: FISCHER et al.
Tel. No.: 202-371-2600
For: Valve Pin Guidance and Alignment System for an Injection Molding Apparatus

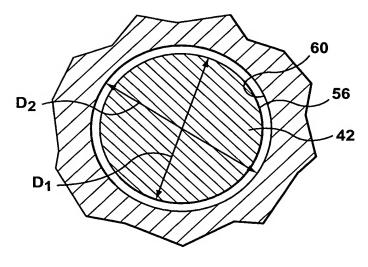


FIG. 17

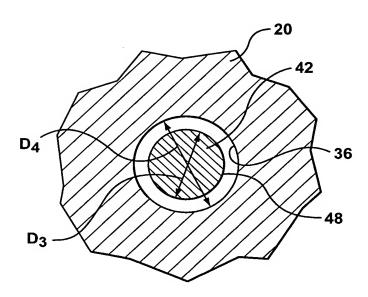


FIG. 18

Sheet 18 of 19
Appl. No. 10/629,699; Filed: Jul 30, 2003
Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722
Inventors: FISCHER et al.
Tel. No.: 202-371-2600
For: Valve Pin Guidance and Alignment System for an
Injection Molding Apparatus

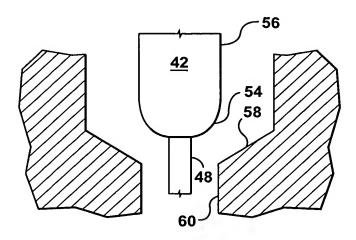


FIG. 19a

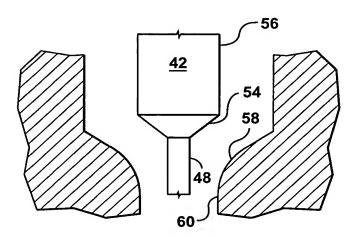


FIG. 19b

Sheet 19 of 19 Appl. No. 10/629,699; Filed: Jul 30, 2003 Dkt No. 2107.1680001/TUM/RLP; Group Unit: 1722 Inventors: FISCHER et al.

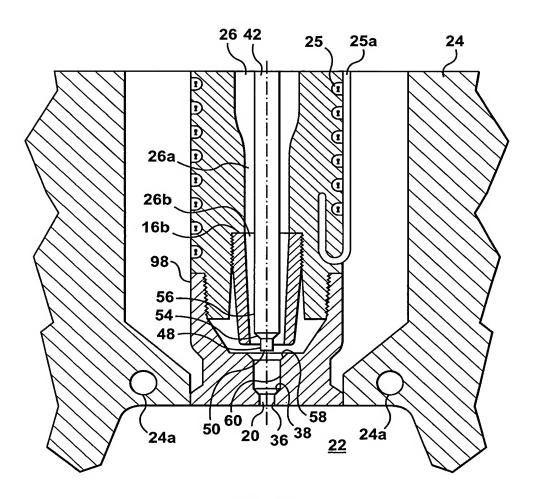


FIG. 20